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2009 Southeast Alaska Herring Spawn-On-Kelp Pound Fishery Management Plan

by

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Alaska Department of Fish and Game **Division of Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, Special Publications and the Division of Commercial Fisheries Regional Reports. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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The Regional Information Report Series was established in 1987 and was redefined in 2007 to meet the Division of Commercial Fisheries regional need for publishing and archiving information such as project operational plans, area management plans, budgetary information, staff comments and opinions to Board of Fisheries proposals, interim or preliminary data and grant agency reports, special meeting or minor workshop results and other regional information not generally reported elsewhere. Reports in this series may contain raw data and preliminary results. Reports in this series receive varying degrees of regional, biometric and editorial review; information in this series may be subsequently finalized and published in a different department reporting series or in the formal literature. Please contact the author or the Division of Commercial Fisheries if in doubt of the level of review or preliminary nature of the data reported. Regional Information Reports are available through the Alaska State Library and on the Internet at: http://www.sf.adfg.ak.us/statewide/divreprots/htlm/intersearch.cfm.

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ABSTRACT

This plan provides an overview of the management approach and regulations for the 2009 herring spawn-on-kelp pound fisheries in Southeast Alaska. Spawn-on-kelp pound fisheries will occur in Craig-Klawock, Ernest Sound, Tenakee Inlet and Hoonah Sound in 2009. Staff biologists listed at the end of this document are available to answer questions regarding this plan. Pound operators are also advised to review the section of this plan that describes requirements of other agencies.

Key words: herring, herring pound, Macrocystis kelp allocation, management plan, spawn on kelp.

INTRODUCTION

This plan provides an overview of the 2009 management approach, permit requirements, and regulations for the Southeast Alaska spawn-on-kelp fisheries. 5 AAC 27.185 MANAGEMENT PLAN FOR HERRING SPAWN ON KELP IN SOUTHEASTERN ALASKA establishes the regulatory framework for the Southeast Alaska spawn-on-kelp fisheries and provides for fisheries in Sections 3-B (Craig/Klawock), 12-A (Tenakee Inlet), and 13-C (Hoonah Sound), and in District 7 (Ernest Sound).

The Guideline Harvest Level (GHL) for the Craig/Klawock area is 1,945 tons. Forty percent (40%) or 778 tons is allocated to the spawn-on-kelp fishery plus any unharvested portion of the winter food and bait quota. The 2008–09 herring winter bait fishery in Section 3-B and District 4 had a final harvest of 143 tons of herring. In 2009, the GHL available to the spawn-on-kelp fishery in Craig/Klawock will be 1,802 tons which will allow for the maximum kelp allocation.

The total 2008–2009 GHL for Ernest Sound herring stock is 529 tons. The GHL for the Ernest Sound spawn-on-kelp pound fishery is any remaining GHL that is not harvested by the winter food and bait fishery or the bait pound fishery. The 2008/2009 winter food and bait harvest is confidential and there are no active bait pound permits in the district. That remaining GHL for the Ernest Sound spawn-on-kelp fishery is within the 100 ton to 299 ton range. This will allow for the minimum kelp allocation for closed pounds for each permit holder.

Hoonah Sound has a GHL of 2,238 tons which will allow for the maximum kelp allocation.

The 2008–2009 GHL for Tenakee Inlet is 825 tons with 90% allocated to the winter food and bait fishery and 10% allocated to the bait pound fishery. After the close of the winter food and bait fishery any remaining GHL is available to the spawn-on-kelp fishery. The 2008/2009 winter food and bait harvest is confidential and there are no active bait pound permits in the district. The remaining GHL for the Tenakee spawn-on-kelp fishery is in the 500–699 ton range.

A *closed-pound-fishery* involves releasing sexually mature herring into a net impoundment in which kelp is suspended. The herring are released from the pound after they spawn on the kelp, and the kelp with eggs is then sold. An *open-pound-fishery* involves suspending kelp from a floating frame structure in an area where herring are spawning. The herring are not impounded by a net but instead are allowed to naturally spawn on the suspended kelp. The kelp blades with eggs are removed from the water then sold.

In the Southeast Alaska herring spawn-on-kelp fisheries, a closed or an open pound may be operated by one or more Commercial Fisheries Entry Commission (CFEC) permit holders. To reduce the amount of gear on the fishing grounds and the associated handling and impoundment

of herring, the Alaska Board of Fisheries has provided an incentive to multiple permit pound operators by giving them a larger allocation of *Macrocystis* blades or fronds.

The Alaska Board of Fisheries made a finding that the use of test fish revenues to develop new commercial herring fisheries is consistent with the ADF&G Division of Commercial Fisheries Test Fishery Policy. The department conducted closed pound spawn-on-kelp (SOK) test fisheries in 2003, 2004, 2005 and 2008. In 2006 and 2007 carry-over test fish revenues and budget allocations provided adequate funding and no test fisheries occurred. In 2009 no test fisheries are planned to support management of any of the Southeast Alaska commercial SOK fisheries.

HERRING STOCK STATUS AND HISTORIC FISHERY PERFORMANCE

METHODS OF FORECASTING HERRING BIOMASS

The Biomass Accounting (BA) method of forecasting is used to determine the season's GHL in Hoonah Sound and Ernest Sound. The BA method uses the most recent year's spawn deposition estimate of eggs, the age composition of the spawning biomass, and weights-at-age to project the following year's return of mature herring. The Hoonah Sound projection uses the estimated survival and maturity estimates from the age-structured analyses (ASA) for the nearby Sitka Sound herring stock. A median historical level of recruitment of age-3 herring specific to Hoonah Sound is also applied to forecast biomass.

This BA method is unlike the ASA method used for forecasting herring biomass for several of the larger stocks in Southeast Alaska, including Craig/Klawock and Tenakee Inlet. The ASA method also uses the spawn deposition estimate of the eggs and the age composition to project the following year's return of mature herring. However, the ASA model calculates survival and maturation rates specific to the spawning stock. The ASA model utilizes a long time series of spawn deposition and age composition information to provide an estimate of the most recent biomass, from which the forecast biomass for the next year is determined. The department will continue to consider converting to use of the preferred ASA method for forecasting once there is an adequate time series of data to do so.

Once a forecast of the season's biomass is calculated, a sliding harvest rate formula allows for a harvest rate of between 10 and 20% of the forecast of mature spawning biomass. When the spawning biomass forecast for an area equals the threshold, the exploitation rate is 10% of the estimated spawning biomass. For each incremental increase in the spawning biomass equal to the threshold, the exploitation rate increases by 2%.

CRAIG-KLAWOCK (SECTION 3-B)

Winter food and bait herring fisheries have occurred in Section 3-B (in the Meares Passage and Bocas de Finas area) since the 1960s. Seasonal landings from the 1960s through 1985 were small, averaging approximately 210 tons. From the start of the herring spawn-on-kelp fishery in 1992, the Craig/Klawock herring GHLs have averaged 1,281 tons, ranging from a high of 2,684 tons in 1992 to a low of 626 tons in 2000 (Table 1). Fishing effort, harvest, spawning dates, fishery dates, and product values are summarized in Tables 2 and 3.

Annual harvest levels are based on a graduated scale that allows for higher harvest rates as the herring population increases relative to the threshold level. No harvest is allowed if the biomass estimate for the stock is less than the threshold level. The established threshold level for the

Craig/Klawock stock is 5,000 tons. Based on the spawn deposition survey, the estimated escapement in 2008 in Craig/Klawock was 22,993 tons**.** This estimate was well above the 14,213 tons forecast to return in 2008. Due to the much higher than expected return in 2008, the department assumed that the 2009 return would well above threshold and at a level that would fulfill the winter bait demand as well as provide for a maximum kelp allocation for the spawn-on-kelp fishery. This allowed the department to allocate biometric staff time to address other priorities. Therefore, the 2009 GHL in Section 3-B was set at the same level as in 2008. The GHL for 2009 is 1,945 tons.

The GHL for the Section 3-B stock is allocated between both the winter food and bait fishery and the herring spawn-on-kelp fishery. Initially, the GHL allocation was 85% for the winter food and bait fishery and 15% for the spawn-on-kelp fishery. In 1998 the allocation was modified so that the winter food and bait fishery is allocated 60% of the GHL with the remaining 40% going to the herring spawn-on-kelp fishery. Therefore, for the 2009 season, the GHL for the winter food and bait fishery was 1,167 tons, and the GHL for the spawn-on-kelp fishery will be 778 tons plus the unharvested portion of the winter food and bait fishery GHL. The preliminary winter food and bait harvest is 143 tons. Since the 2009 herring allocation for the Section 3-B spawn-on-kelp fishery is more than 1,000 tons, the *Macrocystis* kelp allocation will be at the highest end of the allocation range.

Herring spawning normally occurs in the Craig/Klawock area between mid March and early April. The earliest spawning observed since the mid-1970s was March 9 and the latest date of initial spawning occurred April 9, 2005. Historical spawn timing between Craig and Ernest Sound are summarized in Table 3. Traditionally, herring spawn on Fish Egg, Wadleigh, Clam, and Abbess Islands. However, spawning has also been recorded in the area of Portillo Channel, Port Real Marina, the northern and southern shore of San Fernando Island, San Juan Bautista Island, Blanquizal Island, and along the Prince of Wales Island shore at San Christoval Channel and Shinaku Inlet. Figure 1 shows the open area for the Craig/Klawock spawn-on-kelp fishery.

ERNEST SOUND (DISTRICT 7)

Winter food and bait herring fisheries have occurred intermittently in District 7 at Deer Island and other locations since 1969. The major fishery in the district was always at Deer Island and it occurred throughout the 1970s with average season landings of around 500 tons. The fishery was then closed until the 1992–93 season. From 1992–93 until 1998–99, the fishery was open five seasons and on average less than 25% of the available GHL was taken annually with an average season landing of 88 tons. The inaugural Ernest Sound spawn-on-kelp fishery occurred in the spring of 2004. The 2008–09 season will bring the third Ernest Sound herring spawn-on-kelp fishery. Historical spawning biomass, forecast, GHLs spawning dates, harvest, and fishery dates, are summarized in Table 4.

In 2004, the spawn-on-kelp GHL was over 700 tons which allowed for the maximum kelp allocation. The total harvest of spawn-on-kelp product was 112,286 pounds (56.14 tons) split amongst 64 permit holders. Types of pounds fished included 51 single-closed, 6 double-closed, and one single-open. Like the 2004 fishery, the 2008 spawn-on-kelp GHL was greater than 700 tons allowing for the maximum kelp allocation. Unlike the 2004 fishery, effort and harvest were minimal. The total harvest was 19,650 pounds (9.83 tons) of product harvested from 6 double-closed pounds and 1 single-closed pound. Spawning activity was concentrated around Vixen Point, as it has been for the last five seasons, and most pounds were set up south of Vixen Point.

The fishery opened to seining on April 1 and pounders quit fishing before spawning ended so there was no official closure of seining. Fishing occurred from April 16 to April 24, and harvesting occurred from April 20 to April 25. The average price per pound and the ex-vessel value are confidential since the product was all sold to one processor.

The Board of Fisheries created the Ernest Sound spawn-on-kelp pound fishery in January of 2003. The fishery is similar to several other herring fisheries in that it is based upon the portion of the GHL that is remaining after the herring bait fisheries occur. The Board also created a herring bait pound fishery that is allocated 10% of the GHL. The 2008–2009 winter food and bait fishery guideline harvest level was 476 tons and the herring bait pound fishery is 53 tons. Any non-harvested herring in the winter bait fishery and any unallocated herring from the bait pound fishery after March 15 will be allocated to the spawn-on-kelp fishery. There was no bait pound fishery during the winter season. The winter bait fishery closed on February 28, 2009. That leaves a GHL for the spawn-on-kelp pound fishery in the 100–299 ton range.

The established threshold level for the Ernest Sound stock is 2,500 tons. No harvest is allowed if the biomass estimate for the stock is less than the threshold level. The harvest rate is allowed to increase from 10% at the threshold level to a maximum of 20%. The 2009 forecast for Ernest Sound is 4,545 tons. The allowable 11.6% harvest rate results in a combined quota of 529 tons for the bait and spawn-on-kelp fisheries. The expected age structure for 2009 is 3% age-3, 0% age-4, 1% age-5, 28% age-6, 48% age-7, and 20% age-8+.

Herring spawning normally occurs in Ernest Sound in early to mid April. The earliest observed spawn since 1991 was April 5 and the latest date of initial spawning was April 26. Traditionally, herring spawn along the Cleveland Peninsula shoreline between Union Bay and Emerald Bay. However, spawning has also been recorded south to Ship Island, north of Point Eaton, and along the east side of Brownson Island. Figure 2 shows the open area for the Ernest Sound spawn-on-kelp fishery.

TENAKEE INLET (SECTION 12-A)

The Tenakee Inlet stock has been utilized for the winter food and bait fishery since the 1978/1979 season. During seasons that the estimated spawning biomass was above the 3,000 ton threshold, the GHL has ranged from a low of 200 tons in the initial season to a peak of 1,700 tons in 1985/1986 (Table 6). Regulations adopted by the Alaska Board of Fisheries (BOF) in January 2003 provide for a spawn-on-kelp fishery in Tenakee Inlet if sufficient GHL remains at the close of the winter food and bait fishery. This fishery occurred for the first time in April 2003. Summary results of the Tenakee Inlet spawn-on-kelp fisheries are presented in Table 8.

ADF&G has been conducting aerial surveys in Tenakee Inlet since the early 1970s documenting the total miles of spawn each season to provide an indication of herring stock size or biomass. Aerial surveys were supplemented with hydroacoustic surveys from 1979 through 1986, and spawn-deposition dive surveys have been used since 1987 as the most reliable and accurate means to assess the spawning biomass

The Tenakee spawning stock has historically exhibited cycles of abundance. After a decade of fisheries, the stock declined below threshold in the early 1990's and no fisheries took place until 1996. Good recruitment led to nearly a decade of harvestable surplus until the forecasted biomass again declined below threshold in 2006. Aerial spawn surveys and spawn deposition dive surveys conducted in 2008 indicated a significant increase in spawning biomass to the levels

seen in 1997–1999. The resulting GHL for the 2008/2009 season is 875 tons. The anticipated age structure in 2009 is 2% age 4; 71% age 5; 22% age 6; 3% age 7, and 1% age 8+.

Spawning in Tenakee Inlet has generally occurred between the last week in April and the first week in May (Tables 6 and 7). Traditionally, herring spawn primarily along the south shoreline of Tenakee Inlet between Saltery Bay and South Passage Point with the core areas centered east and west of Kadashan flats. In addition, spawn has been documented intermittently along the Chatham Straits shoreline from South Passage Point to Basket Bay. A total of 11.4 nautical miles of shoreline was mapped as receiving herring spawn in spring 2008.

HOONAH SOUND (SECTION 13-C)

Since the department first monitored the population in 1971, the Hoonah Sound herring spawning stock has averaged 7.7 nautical miles of spawn and 3,610 tons of spawning biomass. Since 1990, the year the spawn-on-kelp fishery started, the stock has averaged 11.5 nautical miles of spawn and 5,935 tons of spawning biomass (Table 8). The highest recorded spawning biomass occurred in 2008 with an estimated 19,975 tons. In 2008, approximately 14.5 nautical miles of spawn were observed from April 23 through April 30. Age composition of the 2008 spawning herring was 0% age-3, 3% age-4, 18% age-5, 35% age-6, 24% age-7, and 20% ages-8+ (Table 9).

Based on the spawn deposition survey, the estimated escapement in 2008 in Hoonah Sound was 19,975 tons**.** This estimate was well above the 11,191 tons forecast to return in 2008. Due to the much higher than expected return in 2008, the department assumed that the 2009 return would be well above threshold and at a level that would provide for a maximum kelp allocation for the spawn-on-kelp fishery. This allowed the department to allocate biometric staff time to address other priorities. Therefore, the 2009 GHL in Hoonah Sound was set at the same level as in 2008. The GHL for 2009 is 2,238 tons.

Herring spawning normally occurs in Hoonah Sound during the last two weeks of April. The earliest recorded spawning occurred on April 13, 1990, and the latest recorded spawning was on May 17, 1971. During the 2008 season, spawning occurred from April 23 through April 30. Comparative spawn timing for Hoonah Sound is shown in Table 6. Traditionally, spawning occurs in Hoonah Sound around Vixen and Emmons Islands and the shoreline from Fick Cove to Ushk Point. Spawning has also been observed in Peril Strait along the Chichagof Island shoreline from Finger River to Broad Island, at False Island, and along the Baranof Island shoreline from Nismeni Point to Point Benham. The open fishing area for Hoonah Sound is shown in Figure 3.

In Hoonah Sound during the 2008 season, a total of 100 permit-holders reported landings totaling 445,986 pounds (202.3 tons) of spawn on kelp (Table 10). The average price was $11.47/pound for a total exvessel value of $5,115,459.

CALENDAR OF EVENTS

The following is a calendar of events to be considered by pound operators for the 2009 fishing season.

November 21	News Release announcing the 2009 Craig/Klawock, Ernest Sound, Hobart Bay/Port Houghton and Tenakee Inlet GHLs.
December 11	News Release announcing the 2009 Hoonah Sound GHL of 2,238 tons.
No Specific Deadline	U.S. Forest Service special-use permit applications (for use of National Forest land above mean high tide) must be submitted to obtain a special-use permit. Special-use permits are required to camp or store gear on National Forest land in conjunction with this fishery. Please contact the USFS directly for applications at (907) 747-4220.
March 4	Kelp permits will be available at department area offices; ADF&G will issue a news release announcing the actual harvest of the bait herring fisheries and kelp allocation for Craig/Klawock.
March 15	2009 spawn-on-kelp Pound Fisheries Management Plan available at all Southeast Alaska area offices.
March 17	The Craig/Klawock fishery will be open to seining of herring for placement in pounds effective 12:00 noon.
April 1	The Ernest Sound fishery will open to seining of herring for placement in pounds effective 12:00 noon.
April 6	The Tenakee Inlet and Hoonah Sound fisheries will open to seining of herring for placement in pounds effective 12:00 noon.
May 31	Pounds must be completely removed from the waters of the herring pound fishing area in Section 3-B and in District 7. This includes the area covered by extreme high tide.
June 10	Pounds must be completely removed from the waters of the herring pound fishing area in Sections 12-A and 13-C. This includes the area covered by extreme high tide.

REGULATIONS

GENERAL SPAWN-ON-KELP REGULATIONS

The regulatory framework for the spawn-on-kelp fishery is found in 5 AAC 27.185. MANAGEMENT PLAN FOR HERRING SPAWN ON KELP IN POUNDS IN SECTIONS 3-B, 12-A, AND 13-C, AND DISTRICT 7. The Alaska Board of Fisheries met in Sitka on February 17–26, 2009 and adopted two regulatory changes to the management plan. These changes included; removing the requirement that a permit holder be present at the pound fishing site when kelp is being placed into the permit holder's pound structure [5 AAC 27.185 (o)(1)], and the definition of "the first day" herring are introduced into a herring pound was clarified [5 AAC 27.185(q)]. The new regulations will not be in effect until approximately 90 days after the board meeting concluded so they will not be in effect for the 2009 season. For the purpose of consistency, however, "the first day" herring are introduced into a pound will be applied the same for 5 AAC 27.185 (q) as it is stated under (s).

Definition Of A Closed Pound

A *closed-pound* is defined as a single, floating, rectangular frame structure with suspended webbing that is used to enclose herring for a period of time in order to produce spawn-on-kelp. The webbing of a closed pound may not have a mesh size of more than one and one-half inches. The opening of the closed pound must be rectangular at the water surface and may not exceed 800 square feet in area. Neither the vertical wall nor the near-vertical wall may exceed a depth below the water surface when the pound contains herring as follows:

Surface square footage	Maximum depth
Less than 400	30 feet
401–500	24 feet
501–600	20 feet
601–700	17 feet
701–800	15 feet

The former requirement to "maintain six feet of surplus webbing gathered at the surface that may be lowered into the water when submerged webbing becomes saturated with eggs" has been removed from regulations.

Herring Pound Marking Requirements

Permit holders are required to mark the pound with a sign that has on it the permit holder's first and last name and the five-digit CFEC permit number. The sign must be vertical and the markings must be clearly visible and above the surface of the water at all times (Figure 4). The sign must be left on the pound structure or the net support system the entire time any part of the pound system is in the water.

All lines or structures used to suspend kelp must have legible tags affixed above the water surface that state the number of blades or fronds on that line or structure along with the permit holder's first and last name. In a multiple permit pound, each permit holder must keep their kelp on lines or structures separate from lines or structures that support kelp belonging to other permit holders.

Placement And Release Of Herring In Pounds

Herring may be placed in or added to a pound for four days starting with the initial placement of herring in a pound. After 11:59 p.m. on the fourth day, no additional herring may be added to the pound (5 AAC 27.185 (q)) and those herring in the pound must be released by 11:59 p.m. on the sixth day after the initial placement of herring in a pound (5 AAC 27.185 (s)). Under 5 AAC 27.185 (s) the "*first day*" is defined as the day herring are first placed into a pound. The "*first day*" under 5 AAC 27.185 (q), though not specifically defined, will be enforced as the day that herring are first put into the pound. During the Board of Fisheries meeting in Sitka, February 17–26, 2009, the board adopted language clarifying the definition of "*first day*" in this regulation. Once herring have been released or spawn-on-kelp product has been harvested no additional herring or kelp may be introduced into a pound (5 AAC 27.185 (q)). When releasing herring at least one full side of the pound's webbing must be lowered a minimum of six feet below the surface of the water (5 AAC 27.185 (s)). These regulations are fundamental to the health of the herring spawning stocks and, along with gear size and kelp allocation limits, provide for sustainable use by limiting the harvest of herring by the fishery. Fishermen must take responsibility to ensure that when adding herring to a pound that herring are not at the same time swimming out of the pound as this would be a violation of 5 AAC 27.185 (q).

Connection Of Herring Pounds

After the last herring has been placed into the pounds and the permit holders have notified a department representative, two pounds of two or more permit holders may drop a wall of their respective pounds to allow herring to swim between two connected pounds. Additional herring may not be transferred into the pounds once the two of them are joined. This does not change the definition of pounds as found in 5 AAC 27.130. LAWFUL GEAR FOR SOUTHEASTERN ALASKA AREA. (e)(1) which states that webbing of a closed pound may not be part of the webbing of another closed pound. Therefore, after fishing operations have ended two pounds may be joined, but they must remain up to that point a single unit of gear. If two pounds are joined the regulation that allows for retention of herring for six days will be enforced on the pound which first had herring placed into the structure. Under this regulation only two pounds can be joined together.

Units Of Gear

For the purpose of this fishery, a closed pound is considered to be *fishing* once herring have been introduced into the closed pound structure; a closed pound is considered to have *stopped fishing* once all of the herring have been released and all spawn-on-kelp product has been removed from the closed pound structure. For the purpose of this fishery, an open pound is considered to be *fishing* once kelp has been attached to the open pound structure; an open pound is considered to have *stopped fishing* once the entire spawn-on-kelp product has been removed from the open pound structure.

The Northern Southeast Alaska area includes Sections 12-A and 13-C and the Southern Southeast Alaska area includes Section 3-B and District 7. Since Northern and Southern Southeast Alaska have different limited entry permits a permit holder may have gear in the water in both areas but a permit holder must still be physically present at those times that the pound is actively fished as defined in 5 AAC 27.185. While the permit holder may have gear in both the Northern area and the Southern area at the same time, they may not fish multiple units of gear in either area.

Presence Of Permit Holders Required

A permit holder must be physically present at the permit holder's pound site during the operation of the pound as defined in sections (o) and (p) of 5 AAC 27.185 MANAGEMENT PLAN FOR HERRING SPAWN ON KELP IN POUNDS IN SOUTHEASTERN ALASKA AREA.

Post Harvest Requirements

After a permit holder releases herring and harvests product from the pound, the permit holder must maintain the webbing in place for at least four weeks. To optimize hatching success, the permit holder must position egg-covered webbing in the original size and configuration of the pound structure with adequate water circulation on all sides. The webbing support system must be above the surface of the water and clearly marked as per 5 AAC 27.185 (k).

Harvest And Production

Each permit holder's spawn-on-kelp blades must remain separate from other permit holder's spawn-on-kelp blades until after processing and grading is completed. Permit holders will be allowed to harvest all spawn on kelp produced in their pounds. A permit holder's fish ticket must report only the spawn on kelp they harvested from their pound. Each permit holder fishing a jointly operated pound shall be issued a fish ticket and the sum of the weights of those tickets shall equal the total weight of product produced in the jointly operated pound. All permit holders and any vessel carrying commercial spawn-on-kelp product from the fishing grounds must first contact the ADF&G with the estimated amount of spawn-on-kelp product harvested and indicate the intended time and location of the delivery. For any product that has been delivered on the grounds to a licensed processor, the processor (not the permit holder) will be required to contact the department with delivery weight for each landing on board.

Requirements For Buyers

Reporting requirements for buyers and processors of spawn-on-kelp product from Southeast Alaska spawn-on-kelp fisheries can be found in 5 AAC 27.187 BUYER AND PROCESSORS REPORTING REQUIREMENTS FOR SPAWN ON KELP IN POUNDS FOR THE SOUTHEASTERN ALASKA AREA. Buyers, processors, and permit holders should read and become familiar with these reporting requirements.

Operators of floating processing vessels, tender vessels, and catcher-processors will be required to report in person, by VHF radio, or by telephone, to the Department of Fish and Game office or directly to department area management biologists on the grounds before the start of processing operations in Southeast Alaska. These reporting requirements are specified by regulation 5 AAC 39.130 (f) and (g).

Other Regulations

Additional regulations pertaining to the Craig, Ernest Sound, Hoonah Sound and Tenakee Inlet pound fisheries can be found in the 2008–2009 Commercial Herring Fishing Regulations booklet under CHAPTER 27, ARTICLE 4, SOUTHEAST ALASKA AREA under the following sections: 5 AAC 27.110 FISHING SEASONS FOR SOUTHEASTERN ALASKA AREA(f), 5 AAC 27.130 LAWFUL GEAR FOR SOUTHEASTERN ALASKA AREA(d), and (e), and 5 AAC 27.185 MANAGEMENT PLAN FOR HERRING SPAWN ON KELP IN POUNDS(a) through (x), and 5 AAC 27.187 BUYER AND PROCESSORS REPORTING REQUIREMENTS FOR SPAWN ON KELP IN POUNDS FOR THE SOUTHEASTERN

ALASKA AREA. Harvesting requirements for *Macrocystis* kelp are found in 5 AAC 37.100 PERMITS. AND 5 AAC 37.300 HARVESTING REQUIREMENTS FOR MACROCYSTIS.

It is the responsibility of permit holders to carefully review and follow these regulations.

SECTION 3-B REGULATIONS

Open Waters

The open waters for Section 3-B include: the waters of San Alberto Bay, Shinaku Inlet and San Christoval Channel north of a line from Entrance Point to the southernmost tip of Clam Island to the southernmost tip of Fern Point and East of 133° 20' W. longitude (Figure 1).

In Section 3-B (Craig/Klawock) herring may be captured for placement in closed pounds starting at 12:00 noon on March 17, 2009 until closed by emergency order.

Closed Waters

In Section 3-B certain areas are closed to the operation of herring pounds and seines for taking of herring for placement in pounds. Those areas are shown in Figure 1 and include:

- Klawock Inlet and Big Salt Lake
- Those waters of San Christoval Channel in the main channel enclosed by a line from 55° 35.62' N. latitude, 133° 20' W longitude to 55° 35.17' N. latitude, 133° 20' W longitude to 55° 33.37' N. latitude, 133° 17.52' W. longitude to 55° 33.50' N. latitude, 133°17.28' W. longitude.
- Those waters of Fish Egg and Ballena Islands south of 55° 31' N. latitude and north of the southernmost tip of Cape Suspiro and east of the longitude of Ballena Island Shoal Light.

DISTRICT 7 REGULATIONS

Open Waters

The waters open for the District 7 (Ernest Sound) fishery include: the waters of Ernest Sound east of a line from Point Eaton to Lemesurier Point (Figure 2).

In open waters of District 7 herring may be captured for placement in closed pounds starting at 12:00 noon on April 1, 2009 until closed by emergency order.

SECTION 12-A REGULATIONS

Open Waters

The open waters for Section 12-A include: the waters of Chatham Strait and Tenakee Inlet south of 57° 46.00' N. latitude, north of the latitude of Peninsular Point at 57°30.30' N. latitude, and west of 134°50.00' W. longitude. (Figure 3).

In Section 12-A (Tenakee Inlet) herring may be captured for placement in closed pounds after 12:01 a.m. April 6, 2009 until closed by emergency order.

SECTION 13-C REGULATIONS

Open Waters

The waters open for the Hoonah Sound fishery include: the waters of Hoonah Sound north and west of a line from Point Marie to a point on the northern shore of Hoonah Sound at 57° 37.38' N. latitude, 135° 27' W. longitude (Figure 3).

In Section 13-C (Hoonah Sound) herring may be captured for placement in closed pounds after 12:01 a.m. April 6, 2008 until closed by emergency order.

EXPERIMENTAL GEAR PERMITS

New regulations addressing the definition of a closed pound were adopted by the BOF during the January, 2006 meeting in Ketchikan. Experimental gear permits will not be required to operate rectangular pounds using the newly defined surface area and depth configurations. However, all pounds must be configured in a manner that is consistent with the new regulations specified in the "REGULATIONS" section of this management plan. The department's authority to provide experimental gear permits on a case-by-case basis, as authorized under AS 16.05.050(10), remains in effect. Experimental gear permits may be issued to those providing the department with a detailed plan that demonstrates innovation and the potential to increase spawn-on-kelp product quality and/or quantity without increasing the use of herring. In consideration of recent BOF action, the department will carefully consider the potential benefits of issuing further experimental gear permits before making a decision to proceed.

HARVEST AND ALLOCATION OF KELP FOR 2009

A permit issued by ADF&G is required to harvest kelp for use in pounds (5 AAC 37.900). Kelp harvest permits may be obtained from local department offices. Kelp blades will be allocated equally among permit holders fishing the same type of gear. The amount of kelp allowed for harvest for each permit holder is based on the kelp allocation table as indicated under REGULATION 5 AAC 27.185 (d) plus an allowance for breakage and loss during transport. Specific allocation limits are for individual permit holders and are dependent upon the herring GHL and the type of gear to be used and will be announced following closure of the winter food and bait fishery. The kelp allocations for the 2009 season are listed below. The Craig/Klawock allocation is based on a GHL greater than 1,000 tons remaining following the winter bait fishery; the Ernest Sound allocation is based on a GHL between 100 and 299 tons; the Tenakee Inlet allocation is based on a GHL between 500 and 699 tons; and the Hoonah Sound allocation is based on a GHL greater than 800 tons.

Section 3-B (Craig/Klawock):

- Single permit closed pounds—600 blades of *Macrocystis* kelp;
- Double permit closed pounds—750 blades of *Macrocystis* kelp (per permit holder);
- Triple permit closed pounds—1,125 blades of *Macrocystis* kelp (per permit holder);
- Single permit open pounds—2,500 blades or 250 fronds of *Macrocystis* kelp;
- Multiple permit open pounds—7,500 blades or 750 fronds of *Macrocystis* kelp.

District 7 (Ernest Sound):

- Single permit closed pounds—200 blades of *Macrocystis* kelp;
- Double permit closed pounds—400 blades of *Macrocystis* kelp (per permit holder);
- Triple permit closed pounds—500 blades of *Macrocystis* kelp (per permit holder);

- Single permit open pounds—1,500 blades or 150 fronds of *Macrocystis* kelp;
- Multiple permit open pounds—4,500 blades or 450 fronds of *Macrocystis* kelp.

Section 12-A (Tenakee Inlet):

- Single permit closed pounds—400 blades of *Macrocystis* kelp;
- Double permit closed pounds—500 blades of *Macrocystis* kelp (per permit holder);
- Triple permit closed pounds—500 blades of *Macrocystis* kelp (per permit holder);
- Single permit open pounds—2,500 blades or 250 fronds of *Macrocystis* kelp;
- Multiple permit open pounds—7,500 blades or 750 fronds of *Macrocystis* kelp.

Section 13-C (Hoonah Sound):

- Single permit closed pounds—2,000 blades of *Macrocystis* kelp;
- Double permit closed pounds—3,000 blades of *Macrocystis* kelp (per permit holder);
- Triple permit closed pounds—1,500 blades of *Macrocystis* kelp (per permit holder);
- Single permit open pounds—3,000 blades or 300 fronds of *Macrocystis* kelp;
- Multiple permit open pounds—3,000 blades or 300 fronds of *Macrocystis* kelp.

FISHERY CONDUCT AND MANAGEMENT

Suitable sites for pounds in Craig/Klawock, Ernest Sound, Tenakee Inlet, and Hoonah Sound are limited. To avoid herring mortality and damage to the pounds, permit holders should locate their pounds in an area with minimal exposure to wind and wave action, and a relatively deep bottom. The distance between the locations where herring are captured and where the pound will be anchored should be minimized since long towing distances can cause stress induced spawning, egg loss, de-scaling and mortality of herring.

All permit holders involved in the operation of a pound, whether single or multiple permit pound, must be physically present at their pound fishing site at all times during the *operation of the pound. Operation of the pound* is defined as:

1. The placement of kelp into the pound structure (remains in effect for 2009 season and the new regulation repealing this regulation will be in effect for the 2010 season) ;
2. The capture and transfer of herring into the pound;
3. The collection and sale of herring spawn-on-kelp product produced in the pound;
4. All permit holders must be present when two pounds are joined together.

For multiple permit closed pounds, all permit holders assigned to the pound must be present at their pound site when kelp and herring are introduced into the pound. If only one permit holder is present at this time then that pound must be operated for the remainder of the season as a single permit closed pound and no more than the number of blades of kelp allocated to a single closed pound may be harvested.

The ADF&G will be closely monitoring herring activity using vessel and aerial surveys. Prior to the onset of active fishing the results of aerial surveys will be announced by department news release or in fishery updates. This information will also be available by recorded message at 907-225-6870 (Ketchikan office) for Section 3-B (Craig/Klawock); 907-772-3700 (Petersburg office) for District 7 (Ernest Sound); 907-465-8905 (Juneau Office) for Section 12-A (Tenakee Inlet); and at 907-747-1009 (Sitka office) for 13-C (Hoonah Sound).

In 2009, the department will continue to monitor the practice of ***top-off-fishing*.** This practice has been successfully used to stimulate new spawning in pounds and therefore to produce better

spawn on kelp quality and quantity. The department has a concern, based on observations during the 2003 season, that the practice of “top off fishing” was abused by some fishermen. If a permit holder allows herring to swim out of their pound when they are adding fresh herring to their pound thereby exchanging spawned-out herring for fresh herring this is a violation of 5 AAC 27.185 (q). If any such cases are observed or reported in 2009, then the department will turn such cases over to the Alaska Wildlife Troopers (AWT) for citation. Additionally, the department will consider closure of the fishery to all further fishing by emergency order or limiting fishing to specific daylight hours only. Should the latter two measures become necessary, then such measures may have the unwanted consequence of preventing some permit holders from the capture of herring that season. The department is requesting the assistance of permit holders to ensure that additions of *top-off-fishing* are only conducted in compliance with regulations.

In Hoonah Sound and Ernest Sound, the department will station a vessel and personnel on the grounds when herring are available for capture. In Craig/Klawock department personnel can be contacted through the ADF&G office in Craig**.** In Tenakee Inlet department personnel will be stationed in Tenakee Springs and will be available on the grounds. Department personnel will closely monitor all phases of the fishery. All fishery announcements, including updates of herring activities and fishery openings/closures, will be broadcast by VHF radio, channel 10. Permit holders are expected to have a VHF radio.

To avoid mortality, the transport of herring to the pound site should be done with the pound itself or a pushable/towable net pen. Towable net pens used only for transporting herring must be marked "Tow Pound". Transporting with a purse seine is discouraged except for very short distances. Pound operators should slowly push pounds or tow the pound alongside to avoid prop wash and prevent crushing herring against the net. Pound operators are also advised to minimize the distance herring are towed to avoid stressing the herring or causing egg loss, which can result in poorer quality product. Permit holders are asked to avoid making and holding large sets intended to fill multiple pounds to avoid herring mortality and stress. The department may close the fishery or limit fishing to daylight hours to minimize stress and mortality, to reduce potential set size, or to better monitor the fishery.

Although regulations determine the number of kelp blades that can be harvested and placed in each permit holder’s pound, fishers are encouraged to fish the number of blades which will maximize the overall quality and value of their product rather than simply to fish the total amount allowed. Other measures have successfully been used in the fishery that may be considered when trying to maximize spawn on kelp quality and value include the following:

1) Pound nets may be shaped with internal frames to provide the full net volume;
2) The kelp depths in the pound may be matched with the depth of active spawning by testing spawn deposition with a weighted string;
3) Fishing and transferring herring to pounds should only occur once herring are fully mature;
4) Small top-off sets may be added over a 2–3 day period;
5) The herring density in the net should be limited since spawning is retarded by excessive crowding;
6) Web depth adjustments may be adjusted (consistent with specifications under 5 AAC 27.130 (e)(1)(C)) to provide good water exchange;

7) Working in a small group of permit holders may help to provide adequate time for harvesting herring and tending pounds.

The Craig/Klawock, Ernest Sound, Tenakee Inlet, and Hoonah Sound areas are high-use recreational areas valued for their fish and wildlife resources as well as their wilderness character. The department has received a number of public complaints regarding pound structures and other material that were either abandoned in the water or on the upland areas. Following the fishery and post harvest requirements according to 5AAC 27.185 (t), all pounds and associated equipment used in these fisheries must either be removed from the water (as per 5 AAC 27.185 (w)) or stored in the upland areas under the terms of a required United States Forest Service conditional use permit.

OTHER AGENCY REQUIREMENTS

Prospective pound operators are advised to consider other agency requirements for constructing and operating pounds in Craig/Klawock, Ernest Sound, Tenakee Inlet, and Hoonah Sound. Pound operators are urged to contact the Alaska Department of Natural Resources, U.S. Forest Service, the U.S. National Marine Fisheries Service, and the U.S. Coast Guard to determine other regulations and requirements. Phone numbers for those agencies are listed below.

ALASKA DEPARTMENT OF NATURAL RESOURCES

The Alaska Department of Natural Resources (907-465-3400) manages the use of tidelands and submerged lands seaward of mean high water.

U.S. FOREST SERVICE

In the Hoonah Sound and Tenakee Inlet areas, the U.S. Forest Service has jurisdiction over and manages most of the lands above mean high tide. People who plan to use National Forest land in connection with the fishery must apply for a special use permit from the U.S. Forest Service prior to any occupancy. Special use permit applications are available at the Sitka Ranger District Office, 204 Siginaka Way, Sitka, Alaska 99835, (907-747-6671). Completed applications should be submitted to the Sitka Ranger District well in advance of operations to ensure that a permit is received in time for the fishery. Examples of use needing a permit include (but are not limited to): camping on National Forest land in conjunction with the commercial fishery, and storage of gear on the National Forest.

U.S. NATIONAL MARINE FISHERIES SERVICE

The U.S. National Marine Fisheries Service (907-747-6940) regulates activities that might harm marine mammals.

U.S. COAST GUARD

Structures such as floating fish pens are subject to the requirements of the Code of Federal Regulations, Title 33, Part 64. This regulation requires an owner to apply for a U.S. Coast Guard permit and to install and maintain a light or other private aid to navigation if the U.S. Coast Guard determines it to be necessary to protect maritime navigation.

Herring pounds used in the spawn-on-kelp pound fishery do not require permits for private aids to navigation at this time, provided the owners:

Place two signs on opposite corners of the structure. These signs will be worded “Danger, Fish Pens” (Figure 5).

Place a single, all-points white light on one corner of structures less than 400 square feet in size.

Place a single, all-points white light on every corner of structures larger than 400 square feet in size.

Anchor fish pens within the boundary areas specified in ADF&G regulation 5 AAC 27.185 (f) (Figure 1, Figure 2, and Figure 3).

If all these conditions are not met, the permit holder must apply to the U.S. Coast Guard for an individual "Private Aids to Navigation Permit." If you have questions, call the U.S. Coast Guard Aids to Navigation office, at (907) 463-2254.

PRIVATE LANDS

Some of the area in which pounds may be operated is adjacent to privately owned lands. Pound operators should contact the landowners if they intend to use any of that land above mean high tide. Private land owners in the Craig/Klawock area include the Klawock/Heenya Corporation, Shaan-Seet Corporation, and Sealaska Corporation and private individuals. Figure 6 shows the approximate areas of privately held lands in the Craig/Klawock area.

LIST OF MANAGEMENT CONTACTS

Following are ADF&G Division of Commercial Fisheries contacts regarding this management plan:

Name and Title	Address and Phone Number
Scott Kelley Region I Supervisor	P.O. Box 110024 Douglas, Alaska 99811-0024 (907) 465-4250
Bill Davidson Region I Management Biologist	304 Lake St., Rm. 103 Sitka, Alaska 99835 (907) 747-6688
Kyle Hebert Herring Research Biologist	P.O. Box 110024 Douglas, Alaska 99811-0024 (907) 465-4250
Scott Walker Area Management Biologist Bo Meredith or Justin Breese Assistant Management Biologists	2030 Sea Level Dr. Ste. 205 Ketchikan, Alaska 99901 (907) 225-5195
William Bergmann Area Management Biologist Troy Thynes Assistant Management Biologist	P.O. Box 667 Petersburg, Alaska 99833 (907) 772-3801
Scott Forbes Assistant Management Biologist	215 Front Street P.O. Box 200 Wrangell, AK 99929-0200 (907) 874-3822
Dave Gordon Area Management Biologist Eric Coonradt Assistant Management Biologist	304 Lake St., Rm. 103 Sitka, Alaska 99835 (907) 747-6688
Kevin Monagle Area Management Biologist Dave Harris Assistant Management Biologist	P.O. Box 110024 Juneau, Alaska 99811-0024 (907) 465-4250

TABLES AND FIGURES

Table 1.–Craig/Klawock stock size and winter food and bait harvests, 1987–2008.

Year	Miles Spawn[a]	Forecasted Pre-fishery Biomass[b]	Total GHL Bait and SOK[c](Tons)	Bait Quota (Tons)	Bait Harvest (Tons)
87–88[d]	5	16,550	N/A	2,200	2,014
88–89	27	16,350	N/A	1,810	1,730
89–90	31.7	19,800	N/A	3,150	3,221
90–91	30	18,350	N/A	2,841	3,272
91–92	22	17,800	2,684	2,281	2,295
92–93[e]	23	12,350	1,602	1,362	623
93–94	8.4	7,996	895	760	636
94–95	8	6,778	725	617	124
95–96	5.5	6,262	658	558	4
96–97	9.9	6,755	715	615	517
97–98[f]	13.2	7,018	755	455	254
98–99	11	6,951	750	450	102
99–00	15.4	6,013	626	376	346
00–01	12.9	9,091	1,058	635	145
01–02	16.7	8,387	952	571	92
02–03	18	6,045	630	378	145
03–04	11.2	13,204	1,754	1,052	157
04–05	12	15,577	2,217	1,330	553
05–06	18	14,262	1,955	1,173	689
06–07	8.2	13,768	1,860	1,116	576
07–08	22.3	14,213	1,945	1,167	565
08–09	11.0	14,213	1,945	1,167	143
Average	15.7	11,597	1,281	1,186	876

[a] Spawn year is beginning year of regulatory season listed in the adjacent year column

[b] Forecasted pre-fishery biomass values were estimated with hydroacoustics for 86–87, spawn deposition surveys for 87–88 to 92–93, and age-structured models for 93–94 to 07–08.

[c] Spawn On Kelp (SOK)

[d] Reduced to 1,600 tons on the grounds.

[e] First year bait quota was split between pound fishery 85%:15%.

[f] Herring allocation changed to 60% for the winter food and bait fishery, 40% to the pound fishery.

Table 2.–Craig/Klawock herring spawn-on-kelp fishery summary, 1992–2008.

Statistic	1992	1993	1994	1995	1996	1997
Herring Quota (tons)	403	240	135	109	100	200
Total harvest SOK (tons)	25.7	5.7	16.5	25.4	37.3	21.9
Exvessel value	$180,000	$47,882	$364,199	$1,000,000	$1,490,000	$270,306
Average Price/lb	$3.50	$4.17	$11.00	$19.00	$20.00	$6.00
Average Income	$784.00	$2,081	$4,388	$5,107	$9,700	$1,890
Number of pounds	248	209	147	159	162	119
Number of landings	229	23	83	146	154	143
Blade allocation	310	292	233	174	156	[a]
Total kelp harvest (tons)	7.8	3.7	3.0	3.0	2.6	3.2
Herring spawning dates	3/15–4/10	3/26–4/21	3/23–4/12	3/27–4/9	3/22–4/12	4/7–4/14
Miles of spawn	23.0	8.3	8.0	5.5	9.9	13.2
Forecasted Pre-Fishery biomass (tons)	17,800	12,350	7,996	6,778	6,262	6,755
	1998	**1999**	**2000**	**2001**	**2002**	**2003**
Herring Quota (tons)	500	650	280	914	852	528
Total harvest SOK (tons)	22.4	36.0	0.0	26.9	41.7	69.2
Exvessel value	$152,203	$212,121	$0	$146,859	$218,700	$423,000
Average Price/lb	$3.39	$2.94	$0	$2.70	$3.10	$3.00
Average Income	$1,072	$2,060	$0	$2,880	$2,460	$3,385
Number of pounds	112	70	50	31	50	61
Number of landings	148	103	0	51	89	118
Blade allocation	[b]	[c]	[d]	[e]	[e]	[e]
Total kelp harvest (tons)	3.5	2.9	2.0	3.2	8.2	7.5
Herring spawning dates	3/19–4/8	3/23–3/28	3/22–4/5	4/1–4/7	3/31– 4/7	3/31– 4/7
Miles of spawn	12.5	15.4	12.9	16.7	18.4	11.2
Forecasted Pre-Fishery biomass (tons)	7,018	6,951	9,951	8,042	8,387	6,045
	2004	**2005**	**2006**	**2007**	**2008**	
Herring Quota (tons)	1,579	1,667	1,266	1,284	1,380	
Total harvest SOK (tons)	50.0	115.2	28.9	44.5	148.5	
Exvessel value	$325,000	$603,723	$298,575	$1,087,532	$3,066,788	
Average Price/lb	$3.25	$2.62	$5.15	$12.08	$10.33	
Average Income	$3,420	$9,011	$8,782	$23,139	$25,138	
Number of pounds	50	42	50	52	66	
Number of landings	95	67	34	47	122	
Blade allocation	[d]	[f]	[g]	[g]	[g]	
Total kelp harvest (tons)	14.0	4.9	4.6	5.6	12.2	
Herring spawning dates	3/26–4/7	4/9–4/14	3/30–4/3	4/3–4/12	4/3–4/12	
Miles of spawn	12.0	18.0	8.2	22.3	11.0	
Forecasted Pre-Fishery biomass (tons)	13,204	15,577	14,262	13,768	14,213	

[a] 100 blades for single-closed pound, 150 blades for multiple pound permit holder, and 300 blades for open pound permits.

[b] 120 blades for a single closed pound, 180 blades for a multiple pound permit holder, 360 blades for single open pound.

[c] 155 blades for a single closed pound, 235 blades for a multiple pound permit holder, 470 blades for a single open pound.

[d] 70 blades for a single closed pound, 210 for a multiple pound permit holder.

[e] 200 blades for a single closed pound, 600 blades for a multiple pound permit holder

[f] 350 blades for a single closed pound, 750 blades for a double closed pound, 1,125 blades for a triple closed pound.

[g] 600 blades for a single closed pound, 750 blades for a double closed pound, 1,125 blades for a triple closed pound.

Table **3.**–A comparison of Craig and Ernest Sound herring spawning dates for years 1992–2008. Black bar indicates dates of active spawning.

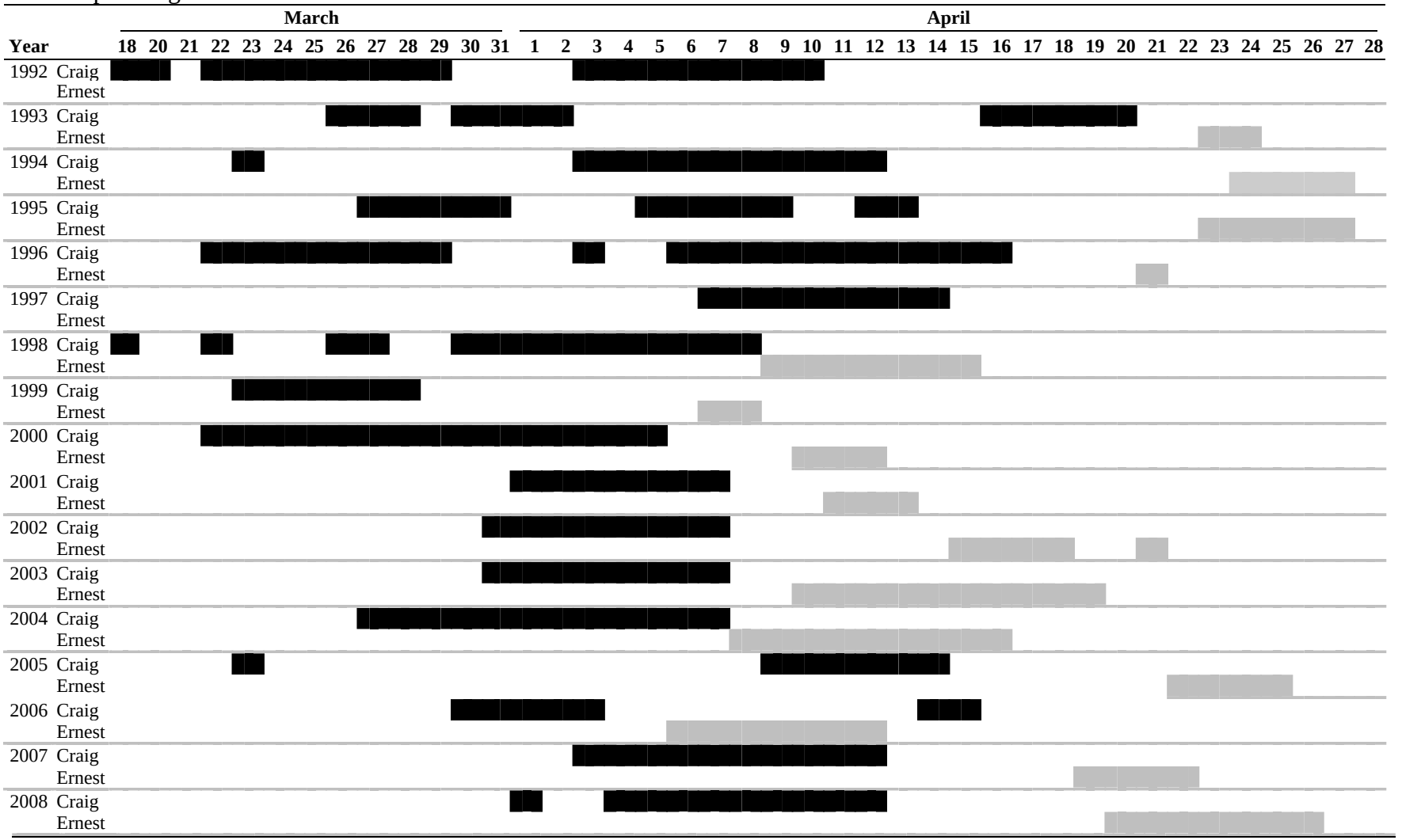

Table 4.–Ernest Sound miles of spawn stock size and harvest, 1969–2008.

Season	Date of first spawn[a]	Nautical miles of spawn[b]	Forecast Used for GHL Determination[c] (tons)	Spawning Biomass (tons)[d]	Guideline Harvest Level (tons)[e]	Bait harvest (tons)[f]	SOK Harvest (lbs)	Sac Roe Harvest (tons)	Remaining GHL (tons)	Minimum Threshold Level (tons)
1969–70	--	--	--	--	--	17	--	--	--	--
1970–71	--	3	--	13,100	--	206	--	--	--	--
1971–72	--	--	13,100	3,650	--	967	--	--	--	--
1972–73	--	--	3,650	450	--	775	--	--	--	--
1973–74	--	--	450	400	--	535	--	--	--	--
1974–75	--	--	400	2,900	--	593	--	--	--	--
1975–76	--	3	2,900	4,350	580	708	--	--	0	--
1976–77	--	3	4,350	3,035	870	901	--	49	0	2,500
1977–78	5/3	--	3,035	1,505	455	340	--	--	115	2,500
1978–79	4/16	2.6	1,505	255	--	--	--	--	--	2,500
1979–80	5/2	4	255	500	--	--	--	--	--	2,500
1980–81	--	3.5	500	410	--	--	--	--	--	2,500
1981–82	--	--	410	160	--	--	--	--	--	2,500
1982–83	--	--	160	1,640	--	--	--	--	--	2,500
1983–84	4/11	--	1,640	1,000	--	--	--	--	--	2,500
1984–85	--	4.5	1,000	1,000	--	--	--	--	--	2,500
1985–86	--	--	1,000	1,000	--	--	--	--	--	2,500
1986–87	--	1	1,000	--	--	--	--	--	--	2,500
1987–88	4/21	2	--	--	--	--	--	--	--	2,500
1988–89	4/17	2.4	--	500	--	--	--	--	--	2,500
1989–90	--	2.1	500	1,000	--	--	--	--	--	2,500
1990–91	--	ns	1,000	3,000	--	--	--	--	--	2,500
1991–92	4/16	9.1	3,000	2,650	--	--	--	--	--	2,500
1992–93	4/23	9	2,650	684	200	8	--	--	192	2,500
1993–94	4/26	8.4	684	2,544	0	--	--	--	--	2,500
1994–95	4/25	6.5	2,544	2,470	255	111	--	--	144	2,500
1995–96	4/16	6.9	2,744	2,665	280	220	--	--	60	2,500
1996–97	4/16	0	4,852	0	377	6	--	--	371	2,500
1997–98	4/9	11.8	--	5,998	0	--	--	--	--	2,500
1998–99	4/5	1.8	5,381	No survey	662	96	--	--	566	2,500
1999–00	4/8	9.1	--	920	0	--	--	--	--	2,500
2000–01	4/11	6.9	--	2,052	0	--	--	--	--	2,500
2001–02	4/15	4.8	1,653	2,406	0	--	--	--	--	2,500

-continued-

Table 4.–continued (page 2 of 2)

Season	Date of first spawn[a]	Nautical miles of spawn[b]	Forecast Used for GHL Determination[c] (tons)	Spawning Biomass (tons)[d]	Guideline Harvest Level (tons)[e]	Bait harvest (tons)[f]	SOK Harvest (lbs)	Sac Roe Harvest (tons)	Remaining GHL (tons)	Minimum Threshold Level (tons)
2002–03	4/10	8.5	2,407	5,509	0	--	--	--	--	2,500
2003–04	4/11	7.1	6,592	2,413	875	44	112,286	--	775	2,500
2004–05	4/22	10.1	1,906	3,268	0	--	--	--	--	2,500
2005–06	4/6	7.9	2,284	2,538	0	--	--	--	--	2,500
2006–07	4/19	11.3	1,955	7,353	0	--	--	--	--	2,500
2007–08	4/20	15.4	9,060	4,846	1,382	**	19,650	--	**	2,500

[a] Since 1997–98 the first spawn and the major spawn have been within 5 days of each other.

[b] 1996–97 No survey, fish all spawned (7.5 miles) along Ship Island, 1998–99 No survey, only 1.8 miles of spawn observed, probably missed main spawn.

[c] 1971–72 through 1984–85 forecasts were based on hydroacoustical-computer generated estimates; 1985–86 through 1991–92 forecasts were based on visual estimates; 1992–93 through 1994–95 were based on spawn deposition estimates; 1995–96 through 2006–07 were biomass accounting forecasts.

[d] 1969–70 through 1983–84 biomass estimates were hyrdoacoustical-computer generated estimates; 1984–85 through 1990–91 were visual estimates; and 1991–92 through 2005–06 were spawn deposition estimates. 1975–76 &1976–77 GHLs are based upon 20% of the acoustical estimate. 1977–78 GHL is based upon 15% of the acoustical estimate(11/28/77 memo by WB).

[e] 2003–04 GHL includes 90 tons rolled over from the bait pound fishery.

[f] 1973–74,1974–75, 1976–77 also include harvests from Fools and Menefee Inlets. Does not include harvests from stat area 107-40.

** Confidential information.

Table 5.–Tenakee Inlet herring spawn deposition timing, location, biomass estimates, and food & bait harvests.

Winter & Spring of the Year	Major Spawning Dates	Nautical Miles of Spawn (nm)	Spawning Biomass [a] (tons)	Food/Bait Quota (tons)	Food/Bait Harvest (tons)
1979	5/9–5/11	3.3	2,500	200	0
1980	4/28–5/2	3.9	4,485	400	504
1981	4/27–5/5	9.3	7,500	750	847
1982	4/25–5/7	11.1	6,650	650	654
1983	4/25–5/6	13.1	8,870	875	799
1984	4/20–4/26	8.3	12,100	850	619
1985	4/24–5/1	9.9	11,000	1,400	1,406
1986	4/27–5/1	8.3	12,500	1,700	2,040
1987	4/22–4/30	7.9	6,600	800	1,275
1988	4/22–4/27	9.1	6,000	1,450	1,577
1989	4/26–4/29	10.3	5,360	720	655
1990	4/25–5/6	2.9	2000	650	595
1991	4/25–5/4	2.1	400	——No fishery——	
1992	5/5	trace	200	No fishery.	
1993	4/21–4/23	6.4	904	——No fishery——	
1994	4/24–4/26	0.25	400	——No fishery——	
1995	4/26	0.05	200	——No fishery——	
1996	5/4–5/14	18.1	4,560	——No fishery——	
1997	4/26–5/7	14.4	9,926	300	97.5
1998	4/24–4/29	12.4	10,419	825	692
1999	4/25–4/28	11.0	11,049	1,023	835
2000	4/26–5/3	13.8	9,425	542	494
2001	4/21–5/1	12.2	7,576	906	775
2002	4/23–4/27	15.4	4,084	840	393
2003	4/25–4/28	12.2	3,529	528	328
2004	4/28–5/3	13.0	4,728	399	confidential
2005	4/26–5/2	8.9	5,825	476	0
2006	5/2–5/6	5.9	5,110	——No fishery——	
2007	4/23–4/26	4.4	3,346	——No fishery——	
2008	4/30; 5/7–5/8	11.4	12,699	——No fishery——	

[a] Spawning biomass estimates were calculated from hydro-acoustical surveys from 1979 through 1986, from spawn deposition surveys from 1987 through 2006.

Table 6.–A comparison of Hoonah Sound and Tenakee Inlet herring spawn dates for years 1993–2008. Black bar indicates dates of actual spawn.

Table 7.–Tenakee Inlet herring spawn-on-kelp fishery summary, 2003–2005.

	2003	2004	2005
Tenakee Inlet GHL (tons)	528	399	476
GHL Available for SOK (tons)	180	360	476
SOK Harvest (tons)	47.6	95	101.4
Exvessel Value	$580,500	$981,464	$512,900
Average Price/lb	$6.10	$4.68	$2.53
Average Income/permit	$10,555	$11,684	$5,636
Number of Permits participating	55	85	91
Number of Pounds	1/15/8/0 [a]	1/32/6/2/2 [b]	1/29/13/3 [a]
Number Permits Landing Product	55	85	91
Kelp Allocation (blades)	200/400/550/0 [a]	300/500/500/2000 [a]	300/500/500/2000 [a]
Kelp Blade Harvest (lbs)	35,375	39,000	53,850
Fishery Open—Closed	4/6–5/6	4/6–5/6	4/6–5/5
Fishing Occurred	4/25–4/28	4/28 –5/1	4/27–4/30
Harvest Occurred	4/30–5/4	5/3–5/6	5/2–5/4

[a] single/double/triple/test
[b] single/double/triple/long line/test

Table 8.–Hoonah Sound herring spawning stock and fishery performance, 1971–2008.

Year	Spawn Dates	Nautical Miles	Estimated Escapement*	SOK Harvested (tons)
1971	5/10–5/17	2.5	833	--
1972	5/11–5/12	1.5	666	--
1973	N/A	1	333	--
1974	14-May	3	999	--
1975	N/A	N/A		--
1976	5-May	1	333	--
1977	N/A	3.5	1,166	--
1978	N/A	5.3	1,765	--
1979	N/A	0.5	167	--
1980	N/A	N/A	--	--
1981	4/30–5/01	2.3	750	--
1982	4/29–5/01	1.5	500	--
1983	1-May	1	333	--
1984	4/26–5/01	3	540	--
1985	5/01–5/03	3.5	1,166	--
1986	4/28–5/01	3.8	1,249	--
1987	4/28–5/02	3.8	740	--
1988	4/30–5/01	5	1,665	--
1989	4/16–4/20	17	4,000	--
1990	4/13–4/28	10	2,350	11.9
1991	4/19–4/24	8.7	2,175	13.3
1992	4/22–4/24	10.8	5,714	23.1
1993	4/27–4/29	5.7	1,099	14.0
1994	4/21–4/23	9	2,450	32.7
1995	4/20–4/21	4.5	274	27.4
1996	5/02–5/9	10.1	4,023	--
1997	4/25–4/28	14.5	5,884	65.2
1998	4/23–4/27	14.5	6,472	85.6
1999	4/27–5/1	13.8	4,426	71.6
2000	4/27–4/30	13.0	3,635	35.7
2001	4/27–5/1	13.7	8,538	66.2
2002	4/25–4/27	11.9	4,936	136.6
2003	4/23–4/27	16.7	9,423	141.5
2004	4/22–4/29	11.1	7,502	237.4
2005	4/18–4/25	10.3	6,924	190.6
2006	4/23–4/26	9.0	6,028	162.1
2007	4/46–5/2	16.5	10,946	159.4
2008	4/23–4/30	14.5	19,975	202.3
Average	1971–2008	7.7	3,610	NA
Average	1990–2008	11.5	5,935	93.1

*Shaded estimated escapements are based on average spawn density from years 1989–2002.

Table 9.–Percent-at-age composition of spawning Hoonah Sound herring, 1991–2008.

	Age Class					
Year	**Age 3**	**Age 4**	**Age 5**	**Age 6**	**Age 7**	**Ages 8+**
1991	44	8	4	15	22	5
1992	7	55	6	4	14	11
1993	7	17	56	8	1	10
1994	3	10	35	42	5	6
1995	25	6	16	30	19	4
1996	83	13	1	1	2	1
1997	8	80	7	2	2	1
1998	2	13	77	7	1	1
1999	3	5	13	72	6	1
2000	23	10	10	24	31	2
2001	17	31	5	6	14	27
2002	4	27	24	6	7	31
2003	5	12	30	25	7	21
2004	1	6	13	26	26	30
2005	1	3	7	18	18	54
2006	0	16	12	10	13	49
2007	1	12	29	26	12	22
2008	0	3	18	35	24	20

Table 10.–Hoonah Sound herring spawn-on-kelp fishery summary, 1990–2008.

Statistic	1990	1991	1992	1993	1994	1995
Herring Quota (tons)	150	150	150	150	150	150
Harvest Quota (tons)	11	12	12	12	12	12
Harvest (tons)	11.9	13.25	23.12	14.0	32.7	27.4
Exvessel Value	$201,348	$193,715	$453,152	$542,080	$1,683,396	$1,175,460
Average Price/lb	$8.46	$7.31	$9.80	$19.36	$25.74	$21.45
Average Income	$2,034	$2,334	$4,196	$8,470	$15,444	$9,715
Number of Applicants	400	185	199	230	195	153
Number of Pounds	128	104	120	115	123	132
Number Selling Product	99	83	108	64	109	121
Kelp Allocation (blades)	240	280	240	160	140	100
Kelp Blade Harvest	31,260	28,355	27,255	16,260	18,340	15,195
Fishery Open—Closed	4/13–4/22	4/6–4/25	4/6–4/26	4/6–5/3	4/6–4/25	4/6–4/22
Fishing Occurred	4/13–4/22	4/15–4/25	4/17–4/26	4/26–5/2	4/21–4/24	4/17–4/22
Harvest Occurred	4/18–4/27	4/22–4/29	4/22–4/30	4/25–5/2	4/25–4/27	4/22–4/26
	1997	**1998**	**1999**	**2000**	**2001**	**2002**
Herring Quota (tons)	1421	700	778	359	366	1,264
Harvest Quota (tons)	114	56	62	29	NA	NA
Harvest (tons)	65.2	85.9	71.6	35.7	66.2	136.6
Exvessel Value	$920,000	$1,160,523	$1,005,529	$587,568	$1,006,000	$1,970,000
Average Price/lb	$7.05	$6.75	$7.02	$8.23	$7.60	$7.32
Average Income/Landing	$6,694	$10,092	$11,692	$6,251	$11,559	$20,408
Number of Applicants	139	133	106	106	NA	NA
Number of Pounds	0/113/18[a]	115	96	46/2/0[a]	42/3/1[a]	106/0/2[a]
Number Selling Product	112/12[b]	115	86	84	87	98
Kelp Allocation (blades)	430/860[b]	400/800[b]	400/800[b]	110/300[b]	120/300[b]	1,000/3,600[b]
Kelp Blade Harvest	68,755	54,275	42,025	29,820	29,966	113,713
Fishery Open–Closed	4/6–4/29	4/6–4/27	4/6–5/3	4/6–5/3	4/6–5/3	4/6–5/1
Fishing Occurred	4/22–4/29	4/18–4/26	4/29–5/2	4/27–4/29	4/25–4/28	4/24–4/27
Harvest Occurred	4/27–5/3	4/25–4/27	5/3–5/5	5/2–5/4	4/30–5/2	4/28–5/1
	2003	**2004**	**2005**	**2006**	**2007**	**2008**
Herring Quota (tons)	427	1,207	728	669	681	2238
Harvest Quota (tons)	NA	NA	NA	NA	NA	NA
Harvest (tons)	141.6	237.4	190.6	162.1	159	202
Exvessel Value	$1,922,500	$2,071,347	$1,117,568	$1,943,422	$4,491,070	$5,115,459
Average Price/lb	$6.79	$4.36	$2.93	$6.00	$14.09	$11.47
Average Income/Landing	$17,800	$19,541	$11,889	$24,600	$49,352	$51,155
Number of Applicants	NA	NA	NA	NA	NA	NA
Number of Pounds	49/1/3[d]	92/12/2 [a]	81/5/3[c]	17/45 [d]	67/12[d]	98/3[d]
Number Selling Product	108	106	94	79	91	100
Kelp Allocation (blades)	500/300/750[c]	1,000/1,000/ 3,000 [a]	1,000/1,000/ 1,500[d]	2,500/1,000/ 1,500[d]	2,500/1,000/ 1,500[d]	3,000/2,000/ 1,500[d]
Kelp Blade Harvest	60,301	126,000	118,450	136,698	122,565	201,262
Fishery Open—Closed	4/6–4/25	4/6–4/28	4/6–4/28	4/6–4/27	4/6–5/4	4/6–5/02
Fishing Occurred	4/19–4/24	4/20–4/25	4/19–4/28	4/18–4/23	4/23–4/29	4/22–4/27
Harvest Occurred	4/24–4/27	4/26–4/28	4/25–4/28	4/23–4/27	4/30–5/4	4/27–5/1

[a] Double closed pounds/single closed pounds/open pounds.
[b] Closed pound/Open Pound.
[c] Single-permit closed pound/double-permit closed pound/triple-permit closed pounds.
[d] Double closed pounds/single closed pounds/triple closed pounds

Note: No fishery occurred in 1996 since the biomass forecast was below the 1,000-ton threshold

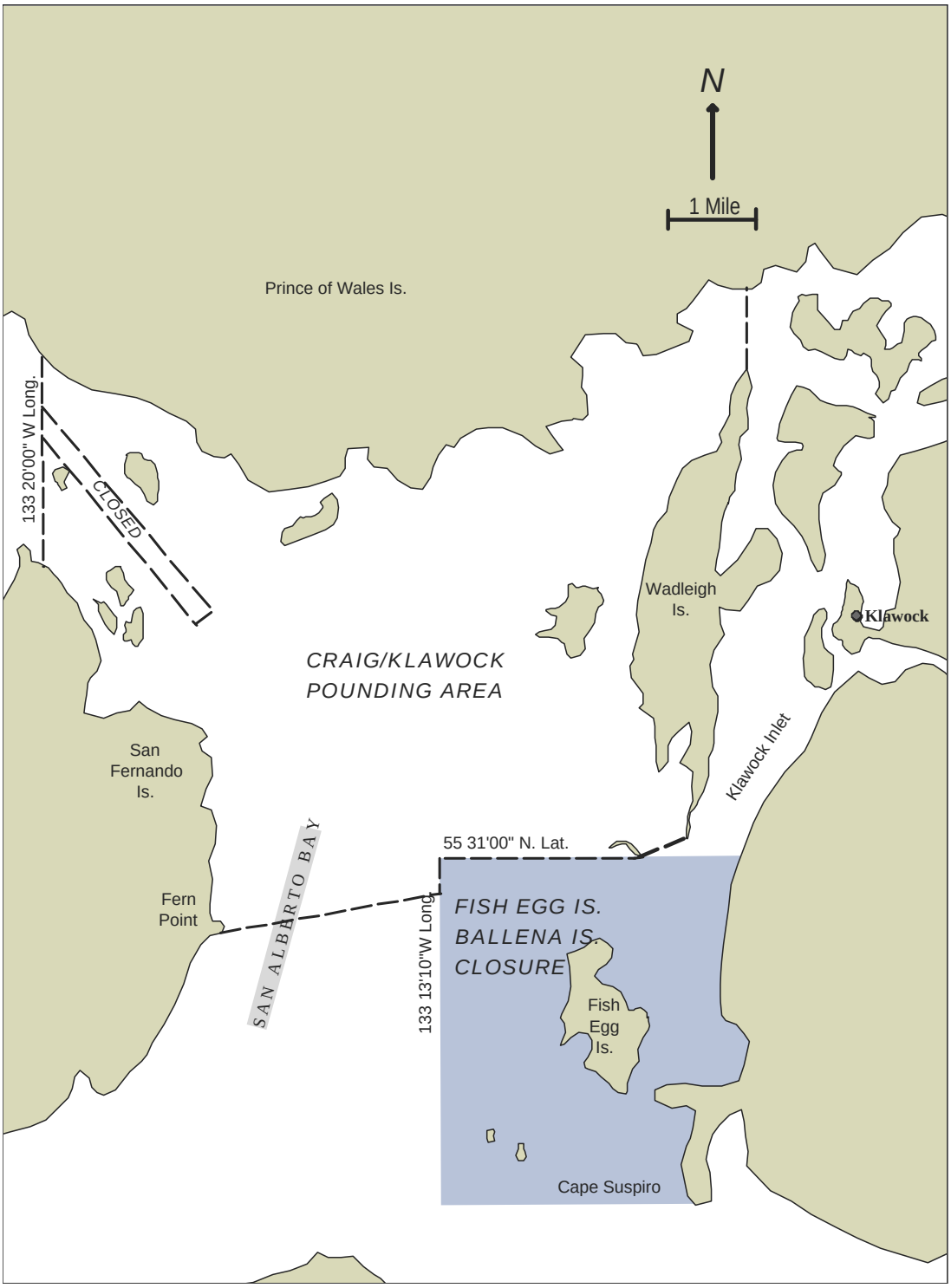

Figure 1.–Open area for Craig/Klawock pound fishery (Section 3-B).

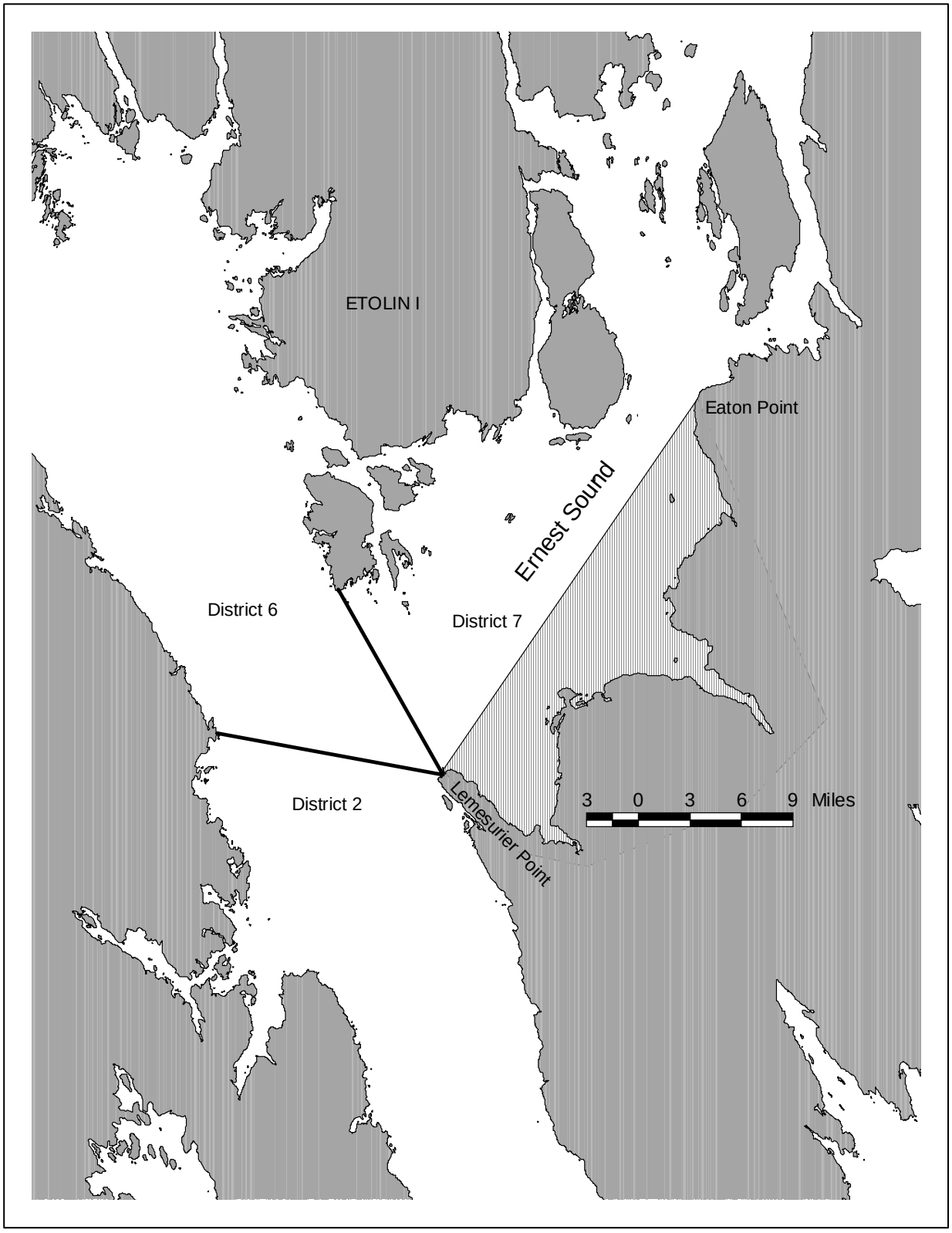

Figure 2.–Open area line for the district 7 Ernest Sound pound fishery.

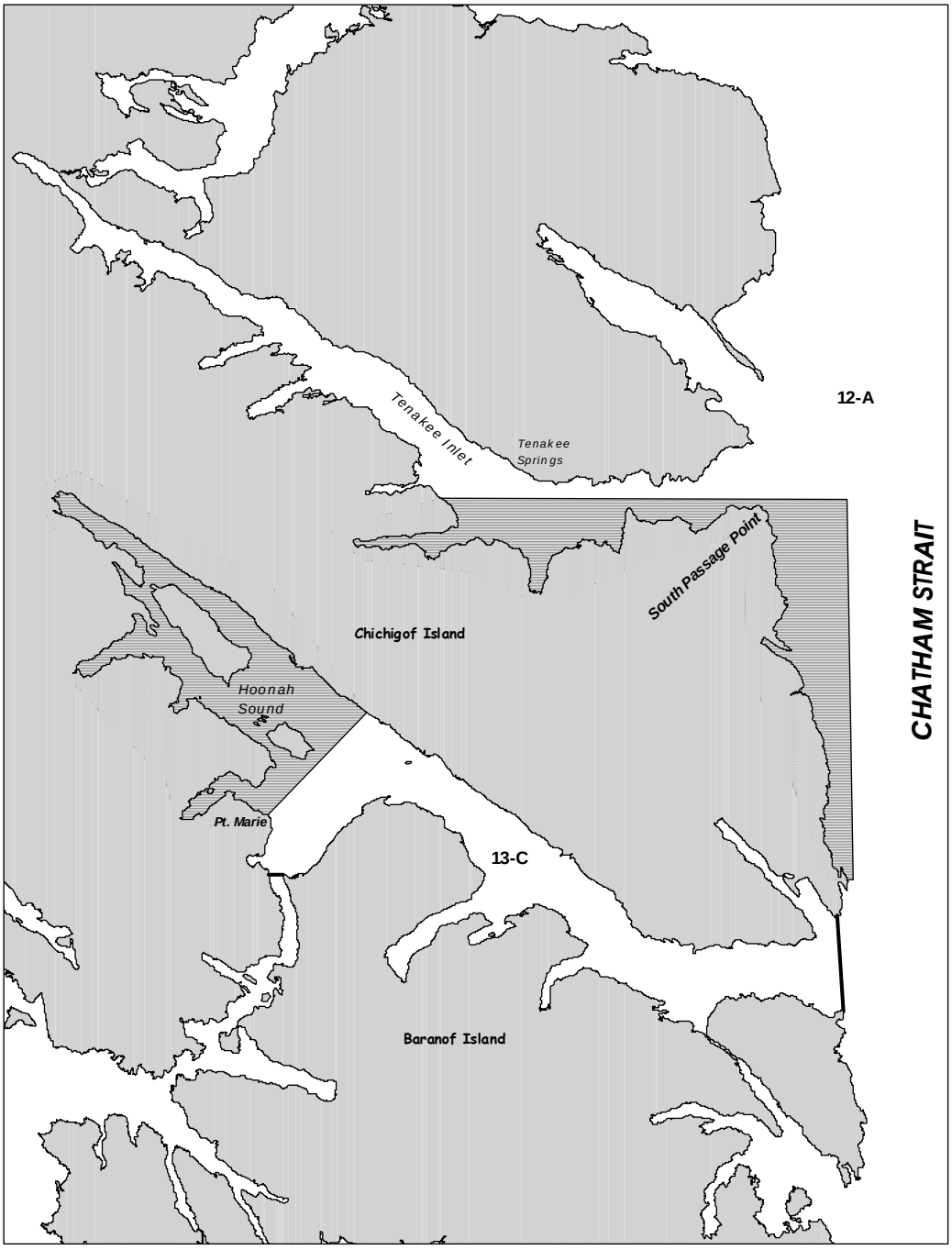

Figure 3.–Areas open (dark shade) to spawn-on-kelp fishery in Hoonah Sound and Tenakee Inlet.

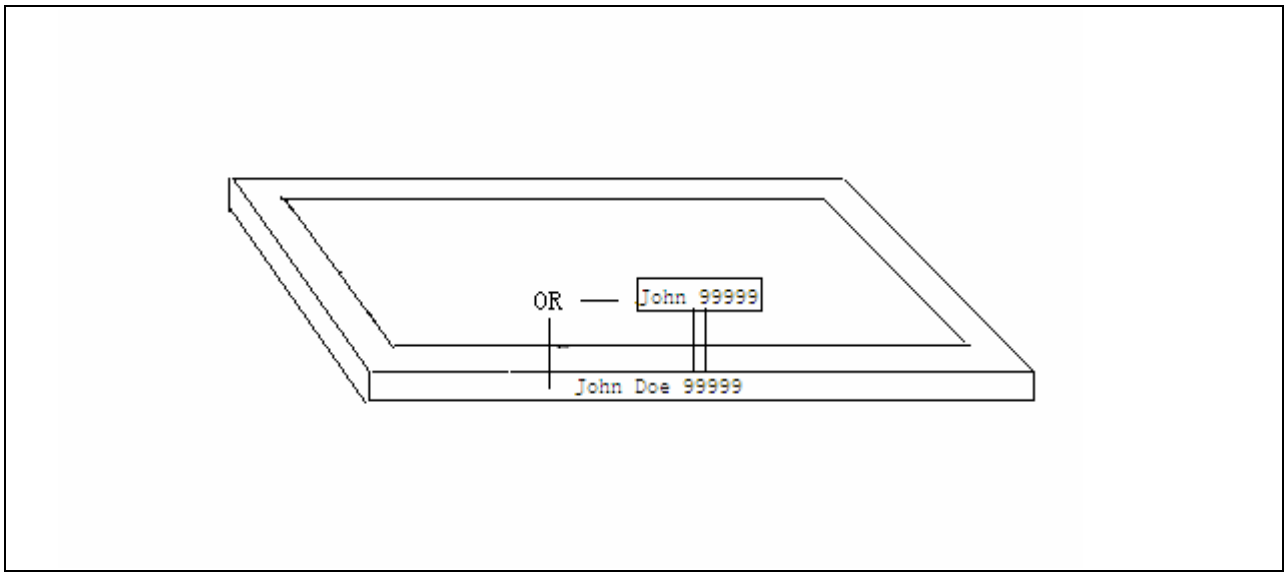

Figure 4.–Diagram of a herring pound showing two alternatives methods of marking herring pounds. New regulations require vertical signs with the permit holder's first and last name and five-digit CFEC permit number (5 AAC 27.185(k)). Letters and numbers must be at least six inches high and at least one-half inch wide and must contrast with the background.

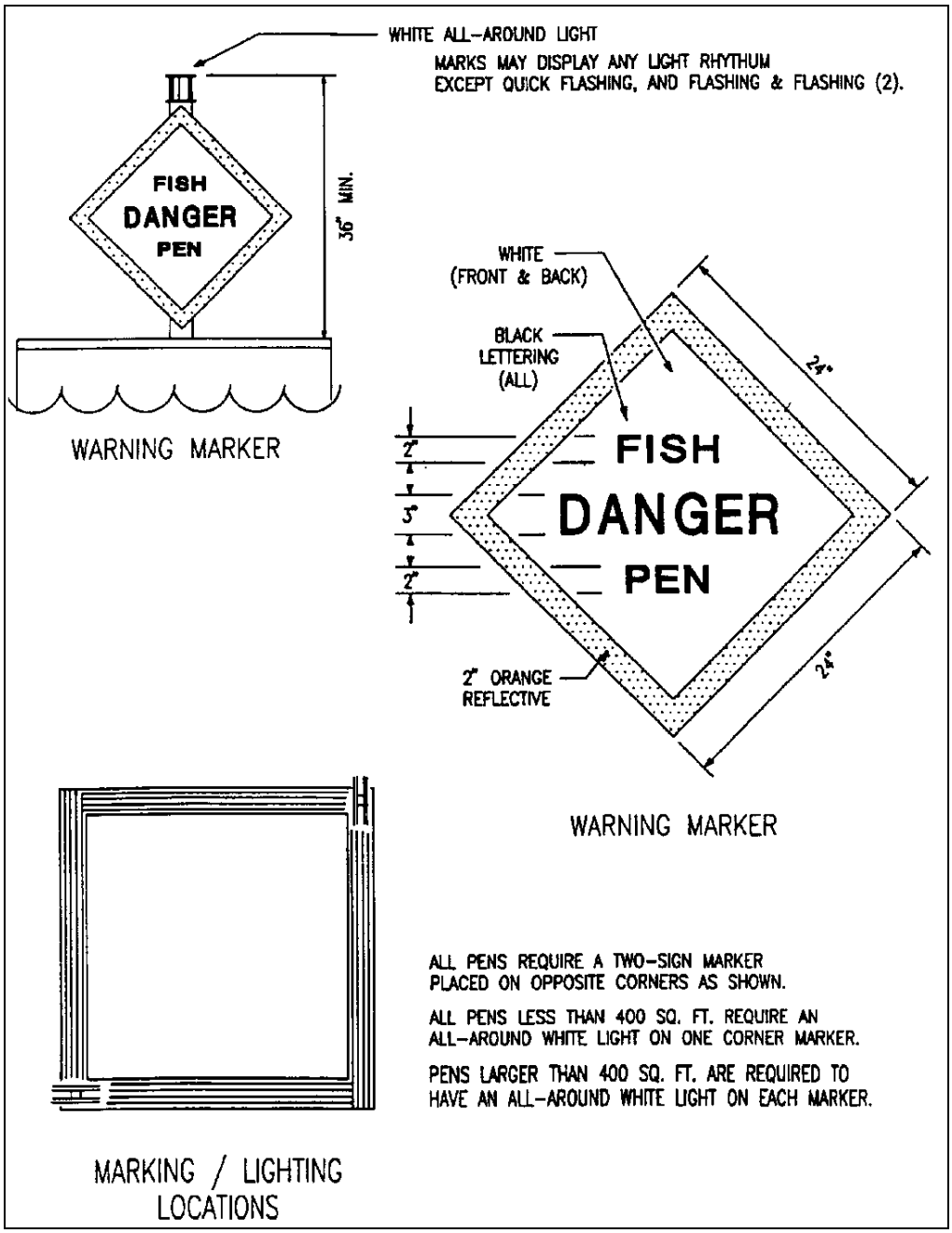

Figure 5.–Coast Guard Requirements for marking pounds.

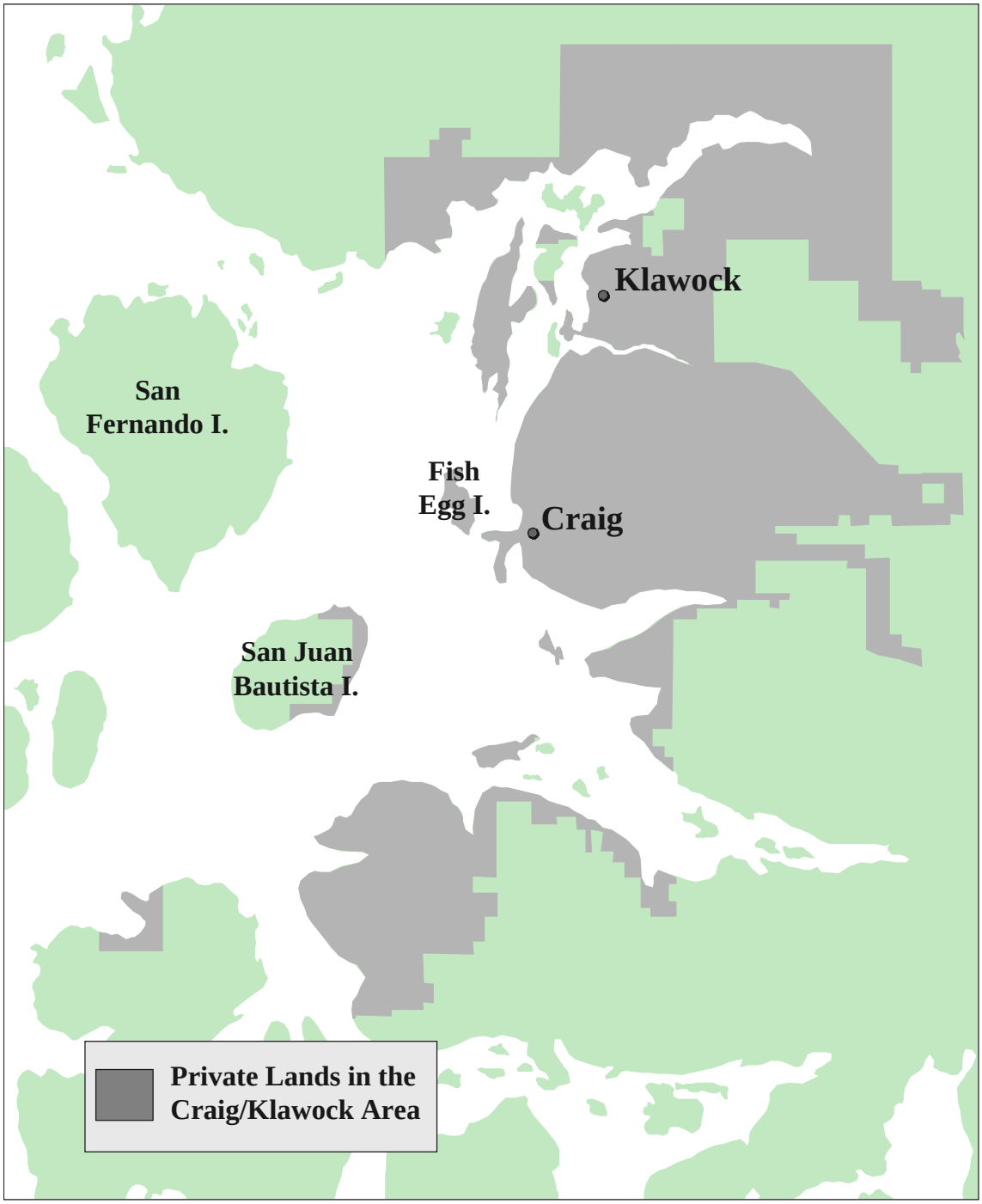

Figure 6.–Private lands in the Craig/Klawock area.